

## Claims

- [c1] A method for sharing data between a relational database and a hierarchical database, comprising:
- defining a hierarchical data entity including a plurality of elements;
  - mapping each of the plurality of elements in the hierarchical data entity to information in a relational dataset contained in a relational database;
  - transforming the relational dataset information into corresponding mapped elements in the hierarchical data entity to form a hierarchical data structure; and
  - accessing data from the hierarchical data structure corresponding to the relational dataset information in the relational database.
- [c2] The method of claim 1, wherein the step of defining a hierarchical data entity comprises defining a hierarchical data entity including a plurality of elements containing a data entity structure and mapping information.
- [c3] The method of claim 2, further comprising identifying each of the plurality of elements by an element name without reference to an entity path.
- [c4] The method of claim 1, wherein the step of defining a hierarchical data entity comprises defining a hierarchical data entity including a plurality of elements containing a data entity structure and defining a hierarchical map structure corresponding to the hierarchical data entity containing mapping information.
- [c5] The method of claim 4, further comprising identifying each of the plurality of elements by an entity path referencing all parent elements in the entity path.
- [c6] The method of claim 1, wherein the step of defining a hierarchical data entity comprises defining simple elements and compound elements.
- [c7] The method of claim 6, wherein the step of defining a simple element comprises defining an element name and mapped fields.
- [c8] The method of claim 6, wherein the step of defining a simple element comprises defining an entity path and mapped fields.

- [c9] The method of claim 6, wherein the step of defining a compound element comprises defining an element name, a database name, a database command, and database fields.
- [c10] The method of claim 6, wherein the step of defining a compound element comprises defining an entity path, a database name, a database command, and database fields.
- [c11] The method of claim 1, wherein the step of mapping each of the plurality of elements comprises:
- reading the hierarchical data entity;
  - determining if a root element is present;
  - ending the mapping process if no root element is present;
  - mapping each compound element of the plurality of elements if a root element is present; and
  - mapping each simple element of the plurality of elements if a root element is present.
- [c12] The method of claim 11, wherein the step of mapping each compound element comprises:
- selecting a compound element;
  - specifying a data source for the compound element;
  - specifying a database command expression for the compound element;
  - executing the database command expression;
  - receiving a dataset containing fieldnames from the data source;
  - adding the dataset fieldnames to a dataset field list in the compound element for enabling simple elements to map to the information in the dataset; and
  - repeating the above steps for each compound element.
- [c13] The method of claim 11, wherein the step of mapping each simple element comprises:
- selecting a simple element;
  - selecting a source dataset fieldname corresponding to the simple element in a dataset field list of a parent element;

specifying data transformation algorithms associated with the simple element; and  
repeating the above steps for each simple element.

[c14] The method of claim 1, wherein the step of transforming the relational dataset information comprises:

receiving the mapped plurality of elements;  
creating a dataset for each compound element of the plurality of elements that contains a database command expression;  
opening the dataset for each compound element;  
transforming each compound element in the mapped elements starting with the root element of the mapped elements; and  
transforming each simple element of the plurality of elements in the mapped elements.

[c15] The method of claim 14, wherein the step of transforming each compound element comprises:

selecting a compound element;  
locating a dataset that is nearest to a compound element;  
creating an instance of the compound element for every record in the dataset; and  
repeating the above steps for each compound element.

[c16] The method of claim 14, wherein the step of transforming each simple element comprises:

selecting a simple element;  
extracting values from each dataset field that map to the simple element;  
creating a simple element in the hierarchical data structure that corresponds to the simple map element;  
transforming data values contained in the dataset fields by transformation algorithms;  
adding the transformed values to other values corresponding to the simple map element; and  
repeating the above steps for all simple elements.

- [c17] A computer program embodied on a computer-readable medium incorporating the method of claim 1.
- [c18] A system for sharing data between a relational and a hierarchical database, comprising:
- means for defining a hierarchical data entity including a plurality of elements;
  - means for mapping each of the plurality of elements in the hierarchical data entity to information in a relational dataset contained in a relational database;
  - means for transforming the relational dataset information into corresponding mapped elements in the hierarchical data entity to form a hierarchical data structure; and
  - means for accessing data from the hierarchical data structure corresponding to the relational dataset information in the relational database.
- [c19] The system of claim 18, wherein the means for defining a hierarchical data entity comprises means for defining a hierarchical data entity including a plurality of elements containing a data entity structure and mapping information.
- [c20] The system of claim 19, further comprising means for identifying each of the plurality of elements by an element name without reference to an entity path.
- [c21] The system of claim 18, wherein the means for defining a hierarchical data entity comprises means for defining a hierarchical data entity including a plurality of elements containing a data entity structure and means for defining a hierarchical map structure corresponding to the hierarchical data entity containing mapping information.
- [c22] The system of claim 21, further comprising means for identifying each of the plurality of elements by an entity path referencing all parent elements in the entity path.
- [c23] The system of claim 18, wherein the means for defining a hierarchical data

entity comprises means for defining simple elements and compound elements.

[c24] A system for sharing data between a relational and a hierarchical database, comprising:

- a hierarchical data entity having a plurality of elements;
- a mapping of each of the plurality of elements in the hierarchical data entity to information in a relational dataset contained in a relational database;
- a transformation of the relational dataset information into corresponding mapped elements in the hierarchical data entity for forming a hierarchical data structure; and
- a memory containing data from the hierarchical data structure corresponding to the relational dataset information in the relational database.

[c25] The system of claim 24, wherein the hierarchical data entity comprises a plurality of elements containing a data entity structure and mapping information.

[c26] The system of claim 24, wherein the hierarchical data entity comprises a plurality of elements containing a data entity structure and a hierarchical map structure.

[c27] The system of claim 24, wherein the hierarchical data entity comprises simple elements and compound elements.

[c28] The system of claim 27, wherein each simple element comprises an element name and mapped fields.

[c29] The system of claim 27, wherein each simple element comprises an entity path and mapped fields.

[c30] The system of claim 27, wherein each compound element comprises an element name, a database name, a database command, and database fields.

[c31] The system of claim 27, wherein each compound element comprises an entity path, a database name, a database command, and database fields.

- [c32] A computer-readable medium containing a data structure for sharing data between relational and hierarchical databases, comprising:
- a hierarchical data structure having a plurality of simple and compound elements stored in the memory;
  - database commands embedded in the compound elements for accessing information in a relational database;
  - tabular datasets created in the memory for storing the accessed information from the relational database; and
  - a relationship between the elements of the hierarchical data structure and the tabular datasets.
- [c33] The computer-readable medium of claim 32, wherein the compound elements comprise:
- an element name property;
  - a database name property;
  - a database command expression; and
  - a database fields property.
- [c34] The computer-readable medium of claim 32, wherein the simple elements comprise an element name property and a mapped fields property.